BRITISH HONDURAS

ANNUAL REPORT

OF THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1961

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ANNUAL REPORT OF THE AGRICULTURAL DEPARTMENT

FOR THE YEAR 1961

PART I

POLICY

The whole question of the future policy to be adopted by the Department of Agriculture was the subject of a Commission of Enquiry in 1960, which submitted a report to Government in November of that year.

2. Whilst still awaiting implementation of the recommendations made by the Commission, the aims, and the policy directed towards their attainment being carried out by the Department at present, are set out below.

3. Aims are:-

(i) Increased production of food crops such as maize, beans, rice and livestock, aimed at self-sufficiency.

(ii) Increased production of export crops such as sugar and citrus.

4. Policy directed to their attainment:-

(i) The preservation of land and its natural resources by proper land utilization.

(ii) Proving the land potential by scatter plot trials.

(iii) Carrying on research into crops of greatest economic benefit to farmers in the country.

(iv) Dissemination of information thus obtained through the media of Radio Broadcasts, Circulars, Demonstrations by Extension Field Staff, and by Agricultural Educational Courses for farmers at the Agricultural School in Central Farm.

(v) Assisting farmers to develop this land by (a) clearing operations using Caterpillar D7 Tractors (ii) by making available Departmental tractors and implements at very nominal rates for cultivation, cambering, draining, fertilizing, and seeding.

(vi) Supplying good planting material at subsidized prices from Departmental nurseries, such as seedlings of Citrus, Cacao, Coconuts and tropical fruit trees, as well as tested and certified vegetable seeds.

(vii) Making available at all Agricultural Stations pedigree bulls and boars for stud purposes, to improve local stock belonging to farmers; by selling to farmers who require them, pedigree bulls and boars from our foundation herds at Central Farm; helping farmers to treat their livestock for various ailments, and making veterinary drugs available to them for this purpose.

(viii) Making loans available to farmers through the Agricultural Credits Fund to help them develop their farms.

(ix) Making lands available to farmers on the Location Ticket system in which they pay for the land in easy annual instalments, whilst developing it, eventually getting Title to the land.

WEATHER CONDITIONS.

5. For the second year in succession the country was struck by the first Hurricane of the Season, "Anna" on 24th July. This hurricane was confined to the southern part of Stann Creek District, crossing the coast near Mango Creek.

6. On October 30/31 yet another hurricane "Hattie", the most devastating yet recorded in the Caribbean, struck the country. Hurricane winds were experienced and damage caused throughout the country, though to a lesser degree in Corozal and Toledo districts, in the extreme north and south of the territory. The eye of the storm crossed the coast near Mullins River in Stann Creek District.

7. Because of torrential rain which accompanied these hurricanes, particularly the second, rainfall in most areas was above normal. Unfortunately several recording stations were demolished as a result of "Hattie", and so in many cases, rainfall records must necessarily remain incomplete for the year.

8. Standing crops suffered as a result of hurricane winds and rain, as well as by heavy and prolonged flooding of the rivers, a direct aftermath of the hurricane. Detailed reports of damage are to be found under specific crops. Rainfall records for the country are to be found in Appendix IV.

CROPS

CITRUS

9. Acreage under Citrus was similar to that of 1960, approximately 3940 acres under Oranges, and 861 acres under grapefruit.

10. The 1960/61 season produced the largest recorded crop of both grapefruit and oranges, and prospects for a heavier crop in 1961/62 were good, when hurricane "Hattie" struck, shortly after the grapefruit season had commenced. About 10% of mature grapefruit trees and 2% of orange trees were destroyed.

11. The whole of the orange crop and most of the grapefruit crop for 1961/62 was lost. Trees were completely defoliated, but made a remarkable recovery, being in full foliage again within a matter of four weeks. Blossoming followed but was irregular, and fruit set varied.

12. During the 1960/61 season the undermentioned fruit was delivered to the Factory at Pomona:-

Grapefruit	260,945	contract boxes
Oranges	717,680	" "

13. During the year the Citrus Growers Association employed Dr. Voorhees, a Citrus Agonomist from Florida. Government paid half his salary the balance being met by the Association from a cess levied from members on boxes of fruit delivered to the Factory.

14. The Third Annual Field Day of the Citrus Growers Association was held at Pomona in August. Part of the day was spent visiting the Cacao nurseries and propagators at the Agricultural Station in the valley.

15. 1960/61 Season Citrus Exports are shown in Table I.

TABLE I.

GRAPEFRUIT	UNIT	QUANTITY	VALUE $
Fresh Fruit	Boxes	47,463	308,984
Sections	A/25 -24	169,746	1,018,476
Juice Sweetened	A/25 -24	18,215	59,199
Juice Sweetened	A/105- 6	27,596	121,422
Juice Unsweetened	A/105- 6	6,256	27,526
Concentrate 4/1 Cases	A/105- 6	20	279
Concentrate 4/1 Barrels	43 galls.	400	57,020
Oil Cases	lbs.	1,363	4,634
			$1,597,540.
ORANGES			
Fresh	bags	1,600	320
Juice Sweetened	A/25 -24	156,884	627,536
Juice Sweetened	A/105- 6	61,213	72,398
Juice Unsweetened	A/105- 6	5,447	24,239
Concentrate 6/1 Cases	A/105- 6	2,994	40,748
" 65/66° Brix l.	A/105- 6	31,120	729,764
" 6/1 Barrels	43 galls.	4,306	755,488
Oil in drum	108 lbs.	57,918	23,167
Oil in Cases	50 lbs.	1,020	408
			$2,274,068

TOTAL GRAPEFRUIT EXPORTS	$1,597,540
TOTAL ORANGE EXPORTS	2,274,068
	$3,871,608

SUGAR CANE

16. For the first time in the history of the Sugar Industry the quota of 25,000 tons was reached. A record crop of 27,577 tons of sugar was produced for the year.

17. The grinding season which commenced on 24th January and should have lasted until 31st July, was extended to the end of September.

18. By agreement the price of cane sold in 1961 was $9.00 a ton with a .01¢ bonus payable for every .01 ton of cane less than 9 required to produce a ton of sugar. However because of bad weather conditions, the average TC/TS, which in mid-May stood at 8.06, rapidly deteriorated, so that by the end of July it stood at 8.29 TC/TS. The Cane Farmers' Association and Factory Management after discussions came to an agreement to pay out the bonus on cane sold before the end of July, and all cane harvested after July to be paid for at a flat rate of $9.00 a ton. In this way Farmers were not penalized, as they would have been, had bonus been ultimately paid on final average for the crop, which worked out to 8.83 TC/TS.

19. Relevant Factory data is shown in Table II

TABLE II

Tons cane ground	243,460
Tons sugar made	27,577

Average grinding rate (tons cane/hour)	64.19
Tons cane per ton 96° Sugar	8.78
Tons cane per ton Sugar (commercial)	8.83
Average juice purity	86.36
Average juice brix	19.39
Average juice	22.34
Tons burnt cane harvested	47,166
% Total crop delivered as burnt cane	19.4
Gallons molasses made	1,188,604

20. Froghoppers were by far the most important cause of damage to cane. A serious attack lasted from July to October inclusive, and it was only in September that most farmers could find labour to apply insecticides to their fields.

21. The British Honduran Cane Farmers Assocation held a series of Committee and General Meetings, to discuss the price to be paid for cane in the 1962 crop. After a deadlock, both Manufacturers and the Association asked the Sugar Board to arbitrate. The Board ruled that an interim price of $9.00 per ton be paid, pending arbitration on the final price of cane, and the finding of an equitable cane price formula for future use. This was agreed to by both parties.

22. Three small mills operated in Toledo District producing 28,728 gallons of molasses and 10,628 proof gallons of rum.

COCONUTS

23. The Agricultural Department assumed complete responsibility for Staff and all Extension work formerly carried out by the Coconut Industry Board. Messrs. H. Braham, N. Rivas and R.E. Majarrez formerly Junior Coconut Inspectors were absorbed by the Department as Farm Demonstrators Grade II. Mr. T. Ramos formerly Senior Coconut Inspector reverted to his substantive post as Farm Demonstrator Grade I, but continued to act as Secretary of the Coconut Industry Board.

24. Licences to export coconuts were approved and issued to two persons - Messrs. A. Alamilla and J. Blake of Belize.

Guaranteed prices fixed by the Board for 1961 were:-

Selected nuts (over 3 3/4" diameter)	$40.00/1000
Rejected nuts (under 3 3/4" "	$30.00/1000

Exports 1961

Whole coconuts	555,500
Copra	94,329 lbs.
Dessicated coconut	3,000 lbs.

25. In January the Board obtained a loan from the Agricultural Credits Fund and purchased 50,000 lbs. of ready mixed fertilizer (12:24:12). Of this amount 34,815 lbs. had been sold to growers before Hurricane "Hattie" struck. A further 10,000 lbs. was salvaged after the hurricane and sold at a reduced price of .03¢ per lb., and the balance was lost. Issue of Loans to growers, formerly handled by the Board, was taken over by the Agricultural Credits Fund.

26. The Board supplied a total of 5,590 selected seed nuts (talls) to the Agricultural Department from Turneffe Cayes.

27. As a result of Hurricane "Hattie", the six Malayan Type Copra Driers built in 1958/59 were destroyed. These were situated at Ambergris Caye, Turneffe, Blair Atholl, Sittee River, Stann Creek and Mullins River.

TABLE III

REGISTRATION OF COCALS 1961

28.

DISTRICT	NO. OF COCALS	ACREAGE OF HOLDING	ACREAGE COCONUTS	BEARING TREES	NON-BEARING TREES	TOTAL TREES
Belize	54	4,460	2,635	58,971	72,932	131,903
Ambergris	35	849	683	9,642	25,178	34,820
Corozal	19	304	185	1,095	8,280	9,375
Orange Walk	14	137	52	279	2,321	2,600
Stann Creek	230	9,084	1,534	29,044	38,145	67,189
Toledo	16	241	58	278	2,643	2,921
TOTALS	368	15,075	5,147	89,309	139,499	238,808

TABLE IV

29. HURRICANE DAMAGE TO COCALS

Category	No. of Growers	TREES LOST Bearing	Non-Bearing	TOTAL
A	177	55,024	16,489	71,513
B	562	55,169	16,779	71,948
		110,183	33,268	143,461

A = Registered Growers B = Non Registered Growers.

30. BANANAS

By January Messrs. Green & Atkins plantation at Waha Leaf had recovered sufficiently from the effects of hurricane "Abby" of 1960, and commenced shipping fruit. By July, when the plantation was once again destroyed, this time by hurricane "Anna", shipments to the United States of America amounted to:-

210,742 lbs. of boxed fruit
2,147 bunches.

CACAO

31. During the year 6900 seedlings, 743 cuttings and 950 shade trees were sold to growers from the Cocoa Station nurseries.

32. This year for the first time the Hummingbird Development Corporation commenced purchasing wet beans from small farmers at .10¢ per lb. Very few growers in the valley have any cacao in bearing, but those that did, were able to dispose of all they had. About 18 tons of dry cocoa beans were exported in 1961.

33. Hurricane "Hattie" in October caused severe damage to all cocoa plantings, and very few growers tried to rehabilitate their groves. Heavy damage was caused to the Cocoa Station propagators, hardening and storage sheds, and clonal nurseries. A total of 11,988 rooted cuttings, 25,448 seedlings and 994 shade trees were destroyed, as well as 2½ acres of clonal nursery. It is hoped though, with rehabilitation work which was immediately started, to save about 75% of trees in this nursery.

34. During the year the Department imported 14,317 open pollinated hybrid seeds from Trinidad. Owing to delay in transit only 4,628 seeds germinated.

35. Mr. G. Ogilvie, Cocoa Officer, who returned to British Honduras on one year's further secondment from Grenada, visited Turrialba, Costa Rica in April to study work being carried out at that Institute on Cushion Gall Disease. He left the country in December to return to Grenada on vacation leave.

36. RICE

Acreages planted to rice in various Districts were:

Toledo	1,683
Stann Creek	36
Cayo	80
Belize	859
Orange Walk	229
TOTAL	2,887 acres.

37. No diseases of rice were reported, and by the end of June a bumper crop was anticipated for the year. However two hurricanes, one in July, the other in October, caused heavy flooding of the rivers chiefly in the Belize District, and most of the crop in that District was lost. Toledo had a bumper crop supplying most of the paddy purchased by Marketing Board during the year. Board purchases of paddy in 1961 amounted to 1,870,194 lbs., of which some 569,786 lbs. of paddy stored at the mill in Belize and awaiting milling was lost in the second hurricane due to the tidal wave.

38. The Department continued with the Hoja Blanca Research programme, at Mussel Creek, but again there was no incidence of leafhoppers, (Sogata arizicola) and it was not possible to indicate which of the many rice varieties being grown was resistant. High floods following "Hattie" ruined most of the varieties in the trial plots.

MAIZE.

39. Acreages planted to maize in various Districts were:

Toledo	3,273
Stann Creek	391
Cayo	4,347
Belize	1,450
Orange Walk	5,324
Corozal	2,518
	17,303

40. Standing crops in 1961 were severely damaged by the two hurricanes and by flooding of the rivers. Marketing Board purchases of maize during 1961 amounted to 163,913 lbs.

R.K. BEANS

41. A total of some 540 acres was planted to beans. In several areas a promising crop was ruined by excessive wet spells during the harvesting period. Marketing Board purchases of R.K. Beans in 1961 amounted to 198,646 lbs.

LIVESTOCK

CATTLE

42. There was no major development in the cattle industry. The question of building an abbatoir continued to be a matter for discussion with the Livestock Cooperative.

43. There was no serious epidemic amongst cattle. There were one or two suspected cases of bovine rabies, but as these animals died in remote areas of Toledo District, (Crique Sarco) it was not possible to collect the brains for examination. However during this time, January and February, there were proven cases of rabies amongst dogs in the Cayo District. Dr. Acha, W.H.O. from Guatemala was able to prove that bats and some bush animals caught in the Cayo District were infected, as examination of the brains revealed them to be positive with negribodies. In this task he received valuable assistance from Dr. R. Lainson and Dr. Strangway Dixon of the Leishmaniasis Research, stationed at Central Farm.

44. The Agricultural Census of 1961 showed the cattle population of the country to be 22,129 head.

PIGS

45. Improved breeding stock from pedigree Large Black pigs at Central Farm are still being sold to farmers throughout the country.

46. The Agricultural Census for 1961 showed a pig population of 13,527 head for the country.

POULTRY

47. The Mennonite Community and two or three larger farmers were engaged in the production of broiler chickens for the Belize market. Prices for these ranged from 70/80¢ a lb. dressed. As no supplies of animal protein are available in the country, poultry rations containing these must be imported from the U.S.A. Because of this, prices cannot compare with dressed imported chickens from the U.S.A. and the Republic of Guatemala, which can still be landed and sold at 55/60 ¢ lb. The broiler chicken industry has therefore not expanded. A total of 42,493 day old chickens were imported during the year from the U.S.A.

48. The Agricultural Census for 1961 revealed a total poultry population of 157,562 birds.

BEEKEEPING

49. In 1961 there was an increase in the number of apiaries. Figures are given in Table V.

50. Production of honey during the year amounted to 158,568 lbs.. Of this 39,236 lbs. were consumed locally, and 119,232 lbs. released to Marketing Board for export. However only 97,200 lbs. were exported, the balance 22,032 lbs. or 78 drums were lost due to the tidal wave following hurricane "Hattie".

51. TABLE V

DISTRICT	APIARIES	HIVES	BEEKEEPERS	1961 PRODUCTION	1960 PRODUCTION
Corozal	45	1400	32	75,664 lbs.	29,700 lbs.
Orange Walk	34	1150	13	66,056 lbs.	25,542 lbs.
Belize	15	448	9	16,848 lbs.	6,534 lbs.
Cayo	6	68	3	NA	NA
Stann Creek	6	110	2	NA	NA
TOTALS	106	3176	59	158,568 lbs.	61,776 lbs.

MARKETING AND AGRICULTURAL CREDIT

52. The Marketing Board purchased Maize, Paddy and Red Kidney Beans at guaranteed prices from farmers, and once again arranged for shipment and sale of Honey in the United Kingdom.

53. Purchases by the Board in 1961 were:

Maize	163,913 lbs.
Paddy	1,870,194 lbs.
R.K. Beans	198,646 lbs.

54. 16 new loans were approved and issued by the Agricultural Credits Fund Committee in 1961. These loans plus instalments on old loans amounted to $61,864 made up as follows:

Livestock and Pasture	9,020.00
Cocoa	4,967.00
Coconuts	8,737.00
Mixed Farming	1,270.00
Transport (1 Boat)	450.00
Pesticides	26,252.00
Citrus	8,268.00
Equipment	2,700.00
Miscellaneous (House)	200.00
	$ 61,864.00

55. Financial position of the Fund at 31.12.61.

			$
Loans issued to 31.12.61	$560,662	Capital of Fund	500,000
Loans committed - 31.12.61	92,037		
	$652,699		
Less repayments	280,758		
	$371,941		371,941
		Balance available	128,059

AGRICULTURAL CENSUS 1961

56. An Agricultural Census for the country was commenced in June, and was completed in three and a half months. Field work was carried out by Extension Staff under direct supervision of District Agricultural Officers. Work of correlation was done at Headquarters by Farm Demonstrator Grade I Mr. F.B. Arana assisted by others. This work was unavoidably interrupted for a period of six weeks following hurricane "Hattie". Fortunately as a result of precautions being taken to safeguard Census Forms on the eve of this hurricane, damage to them was negligible. The Census is issued as a separate publication and contains the following information:-

(i) Number of Agricultural holdings, acreage of each and type of Tenure.

(ii) Acreage of Agricultural holdings classified according to District, Division and Form of Tenure.

(iii) Acreages cultivated under various systems of Tenure according to District and Division.

(iv) Acreages of permanent and annual crops 1961 according to Division and system of Tenure.

(v) Acreages harvested 1960 according to Division and system of Tenure for permanent and annual crops.

(vi) Agricultural Production 1960 according to Division and type of crop.

(vii) Livestock and poultry

(viii) Farm employment and population

(ix) Farm machinery and equipment

(x) Use of Fertilisers

(xi) Water supplies on Farms

PART II

WORK OF THE DEPARTMENT

STAFF

57. It is with deep regret that I record the death, early in 1961, of Mr. M.A.G. Hanschell, Director of Agriculture in British Honduras since 1957, who had been on secondment to Dominica B.W.I. as Superintendent of Agriculture from 1960; also of Farm Demonstrator Grade II Mr. G. Tzib who was killed in September, as a result of a motorcycle accident.

58. Mr. A.N.C. Thomas B.Sc., Senior Agricultural Officer acted as Director of Agriculture till April when he proceeded on leave to the United Kingdom. On his return in October he was retired from the service, as the post of Senior Agricultural Officer had been declared redundant.

59. Mr. M.K. Chopin B.A., Chief Extension Officer and acting Senior Agricultural Officer, acted as Director of Agriculture from April. In October, whilst still continuing as acting Director of Agriculture, he was appointed to the substantive post of Assistant Director of Agriculture, as the posts of Chief Extension Officer and Senior Agricultural Officer were combined, because of the re-organisation of the Department.

NEW APPOINTMENTS

60. Mr. G. Ellis B.S.A. having successfully completed his studies at the University of British Columbia and securing his degree in Agriculture, returned to British Honduras in June, and was appointed Agricultural Officer and posted to Cayo District.

OVERSEAS TRAINING COURSES & CONFERENCES

61. Farm Demonstrator Grade II H.A. Reyes was granted a scholarship, and proceeded to the Eastern Caribbean Farm Institute in Trinidad in September, to take the two year Diploma Course.

62. Farm Demonstrators Grade II, A.Tzul, and Grade I, L.B. Flores, together with Junior Coconut Inspector R.E. Majarrez returned to this country in August, having successfully undergone a two year Agricultural Training Course in Puerto Rico. Mr. Majarrez was transferred to the Department of Agriculture as Farm Demonstrator Grade II, and posted to the Sugar Cane Research Section in Corozal.

AGRICULTURAL EDUCATION

63. Two courses of six months duration, catering for 16 students in each course, were held at the Agricultural School at Central Farm. Unfortunately it was found necessary to suspend the second course after three months, because of hurricane "Hattie", to enable the students to return to their homes and help in rehabilitation work. The second course will be completed early in 1962.

DISTRICT AGRICULTURAL STATIONS

64. ORANGE WALK

MAIZE

Because of the failure of the 1960 crop, maize sold at a premium price. The 1961 crop was an average one, but selling was brisk on the private market, and very little maize was therefore purchased by the Marketing Board in this District.

65. BEANS

About 240 acres was planted out with Black Beans. The hurricane caused severe damage to this crop, and it is estimated that 98% of what promised to be a good crop, was lost.

VEGETABLES

66. Situated as it is, the Orange Walk District is ideal for market gardening. There has been a notable expansion in growing vegetables, farmers using fertilizers, spraying with insecticides and generally turning out a good product. The limiting factors to further expansion are adequate water supplies and organized marketing.

GUINEA GRASS COMMUNAL FARM

67. For the past two years this communal venture has made no progress, pastures and 20 acres of coconuts were allowed to run to bush. A concerted effort is now beingmade at the suggestion of the Minister of Local Government, Social Welfare & Co-operatives to put this communal farm back on its feet and work it on proper co-operative lines. A committee was formed consisting of Mr. A. Marriot, I.L.O. Adviser on Co-operatives, Asst. Registrar of Co-operatives, Agricultural Officer, Orange Walk and a representative of the Agricultural Credits Fund, and plans drawn up by them have been submitted to Government.

YO CREEK AGRICULTURAL STATION

68. A decision was taken by Government to move the Agricultural Station from its present site within the town of Orange Walk and establish it 5 miles away, at Yo Creek. There, the Department have acquired 50 acres, on which it is hoped to have the new station. In the area surrounding the new station site, Government have commenced surveying and blocking off 100 x 30 acre lots, which will be used for the first Land Settlement Scheme in British Honduras, plans for which were drawn up by the Department and submitted to Government, before the Delegation went to Canada and Washington.

STANN CREEK

69. This District produced a record crop of grapefruit and oranges for the 1960/61 Citrus Season, and with the crop on the trees, anticipated an even larger production for 1961/62. However hurricane "Hattie" completely wiped out the crop, and did untold damage to citrus orchards, cacao groves, buildings and installations.

70. Rehabilitation scheme for Citrus, Cacao and immediate relief for distressed farmers in the Mullins River, Carib Reserves North and South, Silkgrass, Sittee, Hopkins and Seine Bight areas were drawn up and submitted to Government.

71. Damage to buildings, orchards, nurseries and pastures on the Agricultural Station was very severe. It will not be possible therefore to rehabilitate the nurseries much before 1963, and citrus and grafted mango seedlings will not be available before that year.

72. COCOA STATION

As this is situated on the Agricultural Station in Stann Creek Valley the story is the same. The hurricane completely wrecked the propagators, hardening and storage sheds, and clonal nurseries. Again, though prompt measures were taken by the Cocoa Officer, Mr. G. Ogilvie, to clean up debris, prop up and fertilize the clonal plants, it will not be much before 1962/63 when clonal propagation can be undertaken.

73. The demand for seedlings and cuttings from the Cocoa Station was very poor during the year. There does not appear to be much enthusiasm for further expansion of cocoa planting in the country.

74. An attempt was made towards the latter part of the year to form a Cocoa Growers Co-operative, who would handle their own processing and marketing.

TOLEDO

75. MAIZE

Though 3,437 acres was under this crop, no produce was offered to Marketing Board to purchase. This might be due to severe damage caused to standing crops by the first hurricane of 1961, "Anna", as a result of which, yields in the Indian Reserves were poor.

RICE.

76. Toledo had a bumper crop in 1961, Marketing Board purchasing some 1,751,733 lbs. in that District.

77. The Department Mechanical Extension Services were again able to help farmers in the Dump area with ploughing, harrowing and seeding. In all some 137 acres of land were prepared, and yielded approximately 206,286 lbs. of paddy. Yields in some fields amounted to 3,200 lbs./acre.

CAYO

MAIZE

78. About 2,500 acres were planted to maize in this district. Damage by birds at the time of planting, and by the hurricane winds of "Hattie", at the time the crop was maturing, caused a loss of approximately 50% of the crop.

CATTLE

79. Cattle is still the most important aspect of farming in the district. Much damage was caused to pastures and livestock by the floods after "Hattie", in some areas as high as 30 feet. Proposals were drawn up and submitted to Government to assist farmers who were thus affected.

80. EXTENSION Every effort is being made to get more farmers interested in horse-drawn ploughs. To date four farmers have such ploughs, and by demonstration, showing the good results obtained with bean and corn crops, it is hoped to increase the number.

81. Government have decided to resettle farmers who were compelled to leave Belize Estate & Produce Co. lands. Land is being made available in the Roaring Creek, Tea Kettle and Little Barton Creek areas.

BELIZE

RICE

82. Trials were once again laid down at Tennessee Agriculture Ltd., Mussel Creek, using several varieties to test resistance to Hoja Blanca disease. Results were again inconclusive because there was no infestation or attack by leaf-hoppers. Floods following the hurricane damaged the trials and seed of most varieties was lost.

83. At the village of Crooked Tree, an enterprising farmer who has a small power-operated rice mill purchased some 57,402 lbs. of paddy and milled 35,400 lbs. of rice. As stocks in Belize had been destroyed, he was, for some time, the only source of supply for the Northern Districts.

OTHER CROPS

84. Floods following the two hurricanes ruined rice and maize crops in farming areas along the Belize & Sibun rivers.

Two small dairy farms operated during the year, and 72,900 lbs. of fresh milk were sold in Belize.

CENTRAL FARM

Livestock - Cattle

85. The herds at Central Farm have shown a general improvement during 1961. This upward trend was noticed last year with the introduction of improved pastures. The calf crop for 1961 totalled 87,38 bull and 49 heifer calves.

Foundation Herd No. 1 Jamaica Red.

86. This herd has demonstrated the ability of the Jamaica Red cattle to thrive in this environment and produce sufficient milk to rear a good calf. There is a small but steady demand for Red Poll bulls amongst small cattle owners who lack facilities for handling half-bred Brahman stock.

Foundation Herd No. 2 Brahman.

87. After a period of acclimatisation extending from 1959 to late 1960, this herd has settled well to its new environment, and has shown its quality by a marked ability to flesh well. Most of the cows have developed large and well shaped udders.

Herd No. 3 Local Cattle.

88. Since the introduction of a Brahman bull into the herd to demonstrate the up-grading of local cattle, there has been a great improvement in the size and vigour of the calves which have inherited to a marked degree the Brahman characteristics. It is possible that there will be sufficient uniformity in the next generation for a foundation herd, for further cross breeding.

TABLE VI

89. Cattle Stock as at 31.12.61.

Type	Bulls	Cows	1960		1961		Total
			M.	F.	M.	F.	
Jamaica Red	4	38	5	17	11	12	87
Brahman	4	20	1	2	7	9	43
Local	1	77	24	15	17	25	159

90. DAIRY PRODUCE - MILK

Supplied to Consumers	Supplied to Calves	Supplied to Pigs
19,055 lbs.	17,472 lbs.	5,225 lbs.

PIGS

91. In the beginning of the year orders for large black pigs fell below the 1960 demand. Sows were only mated after the receipt of several requests for weaners. It has been noticed that farmers are reluctant to buy animals from us if they are above the popular weight of 40/50 lbs.

SAN ROMAN CANE STATION

92. The water supply system was improved by installing a deep well pump and erecting a vat. Water is now piped to the five houses on the cane station.

93. A shed was erected for the storage of tools and fuel.

94. In the following tables records are given of vegetable seeds and plants sold from Agricultural Station Nurseries; Livestock sold to farmers for breeding purposes, Livestock sold for butchering; and work completed by Departmental mechanical units for farmers in different districts.

94A. TABLE VII

VEGETABLE SEEDS AND PLANTS SOLD FROM AGRICULTURAL STATION NURSERIES.

STATION	VEG. SEED PKTS.	CITRUS SEEDLINGS	CACAO SEEDLINGS	TROPICAL FRUIT TRS.	GRAFTED MANGOES	COCONUTS TALL	COCONUTS DWARF	ORNAMENTALS
Toledo	369	72	4,675	-	82	1009	-	-
Stann Creek	366	4,591	7,643	150	242	-	11	72
Orange Walk	3,209	-	-	278	73	295	900	-
Cayo	397	323	-	-	-	-	-	-
Central Farm	-	307	-	-	-	-	1454	1548
Belize.	1,828	-	-	-			-	-
TOTALS	6,169	5,298	12,318	428	397	1304	2365	1620

In addition the Department of Agriculture distributed free of cost 101 lbs. of vegetable seeds, 100,000 lbs. R.K. Beans seed as Hurricane "Hattie" Relief and 2,000 coconuts seedlings (Talls) as Hurricane "Abby" Relief.

TABLE VIII

LIVESTOCK SOLD TO FARMERS FOR BREEDING PURPOSES

STATION	Brahman M.	Brahman F.	Jamaica Red M.	Jamaica Red F	Brahman x Local M.	Brahman x Local F.	Red Poll x Local M.	Red Poll x Local F.	LARGE BLACK PIGS Boars	LARGE BLACK PIGS Gilts
Toledo	-	-	-	-	1	-	2	-	-	-
Stann Creek	-	-	-	-	-	-	2	4	-	-
Central Farm	-	-	3	-	1	-	-	-	9	10

Sold for Slaughter - Cattle 23
Pigs 2

TABLE IX

WORK DONE FOR FARMERS BY DEPARTMENTAL MECHANICAL UNITS

		TOLEDO	CAYO	STANN CREEK	BELIZE	ORANGE WALK	TOTALS	
Acres	Ploughing	142	16	3	44	6	211	acres
	Harrowing	142	10	4	44	5	205	"
	Drilling	142	-	-	-	-	142	"
	Cambering	-	-	2	-	-	2	"
	Rotavating	-	-	2	1	-	3	"
	Mowing	-	-	8	-	-	8	"
	Bush Hogging	22	219	76	74	43	434	"
	Spraying	-	-	-	14	-	14	"
	Fertilizing	-	-	-	9	-	9	"
Hours	Hauling	54	-	-	-	230	284	hrs.

LAND CLEARING UNIT

95. The unit was unable to accomplish more than 600 acres of clearing and harrowing for the year, due to adverse weather conditions and floods. After hurricane "Hattie" the 4 Cat D7 Tractors and personnel, were put at the disposal of the Conservator of Forests, to help him with urgent Fire Precaution work.

VETERINARY SECTION

96. In January an outbreak of rabies occurred in the Cayo District. The brains of a dog destroyed at Central Farm were sent to Guatemala City for examination, and were found to be positive to negribodies. Movement of dogs into and out of Cayo District was restricted for several months, and Police inspection points were set up in Belize and Roaring Creek Village.

97. A mass vaccination campaign for dogs throughout the country was immediately started, and carried out by the Health Department, assisted by Farm Demonstrators of the Department of Agriculture in the Stann Creek Valley.

98. Dr. Acha W.H.O. from Guatemala, visited Cayo District on several occasions, and was able to procure bats and other forest animals for examination. He confirmed that bats and some forest animals were infected.

99. Two cows died in the remote parts of Toledo District (Crique Sarco) area), from what is suspected to be rabies, but as it was not possible to send the brains for examination, it was never confirmed.

100. A list of treatments for various livestock ailments carried out by the Farm Demonstrators is given in Appendix I.

HURRICANE "HATTIE" The role played by the Department following the Hurricane.

101. The year 1961 promised to be a most successful year as far as Agriculture in British Honduras was concerned. The Sugar Industry produced the largest crop ever viz 27,577 tons, and for the first time the export quota of 25,000 tons was met. The Citrus Industry in their 1960/61 Season made the largest crop to date viz. 260,945 contract boxes of grapefruit and 717,680 contract boxes of oranges, and hopes were high of surpassing these figures in the 1961/62 Season. In the South the early crop of rice was excellent, and the late crop of BG 79 promised to be a bumper one. Farmers both large and small, whether engaged in livestock raising, permanent crops such as Citrus, Cacao & Coconuts, mixed farming or market gardening, could look forward with confidence to the future. Then as a bolt from the blue "Hattie" struck.

102. In a few short hours, hurricane "Hattie", the severest tropical storm yet recorded in the Caribbean, left a trail of destruction wherever it rampaged through British Honduras. Hardest hit were Belize and Stann Creek Districts, the off-shore Cayes and to a lesser extent Cayo District. Some damage was also caused in Tolodo and Orange Walk Districts.

103. Immediately following the hurricane, as communications were disrupted, it was not possible to contact the Central Farm or Stann Creek Stations to ascertain the extent of damage done. In Belize, as the Headquarters Office on the top of Paslow Building had been wrecked, staff assisted in salvaging as much of the office records as possible, and were then posted to various emergency jobs, the Chief Agricultural Officer as Transport Officer and other members to Relief Feeding Centres.

104. Contact was established with Agricultural Officer, Orange Walk, and arrangements were made to use the Land Clearing Truck stationed at the time in Orange Walk, to make daily runs into Belize bringing bread, citrus fruits and whatever vegetables were available, to the various Relief Feeding Centres. These foodstuffs were donations from the people of the Orange Walk District.

105. Carpenters from Central Farm and Orange Walk Station were brought into Belize, and carried out temporary emergency repairs to four Government buildings. Three Massey Ferguson Tractors with drivers were made available from Central Farm, one with a posthole digger operated at the Hattieville Camp site, and two were attached to the Public Works Department, and used in Belize City for clearing debris off streets. These tractors were thus

employed for several months. As all motor transport which had been in Belize during the storm was out of commission, the Department made two Landrovers and a portable light plant available to the British Honduras Volunteer Guard Headquarters.

106. In Stann Creek Town, heavy units of the Land Clearing Unit under the Land Clearing Engineer were employed in clearing up the debris and opening up the roads. 4 Cat D7 Tractors were then attached to Forestry Department for urgent Fire Precaution work.

107. With Professors Wilson and Jolly from Trinidad, the Ag. Chief Agricultural Officer visited the devastated areas and assisted in preparing the first report on damage done to agriculture, for submission to Government.

108. An immediate survey of damage done to farms and crops was instituted and carried out by Farm Demonstrators in all the affected areas. This report was submitted to Hon. the Minister for Natural Resources, Commerce & Industry. In Table X, a statement setting out damage to crops, and livestock is given.

109. With the arrival of the team from the United Kingdom who had come to assess the damage and make recommendations to the United Kingdom Government for rehabilitation assistance, visits were paid to all the Districts of the country. These tours were arranged by the Acting Chief Agricultural Officer who accompanied the members of the Commission.

110. Severe damage was caused to buildings, nurseries and groves on the Agricultural Station, Stann Creek, affecting both the Citrus and Cocoa sections. At Central Farm damage was caused to pastures and fencing. Work of rehabilitating the stations at Stann Creek and Central Farm was commenced almost immediately.

111. The Ministry of Natural Resources though the Department of Agriculture made 1000 sacks of imported R.K. Bean Seed and 101 lbs. of vegetable seeds available for free distribution to farmers in all districts, to enable them to start rehabilitating their farms.

TABLE X

ASSESSMENT OF DAMAGE TO CROPS AND LIVESTOCK

Hurricane "HATTIE"

ANNUAL CROPS

CROPS	ACRES
Corn	2,647
Black Beans	240
Rice	603
Groundfoods	517
Plantain & Bananas	1,245

LIVESTOCK

	Head
Cattle	628
Pigs	398
Sheep	53
Poultry	33,803 birds.

PERMANENT CROPS

CROPS		ACRES
Tropical fruit trees		720 acres
Citrus 1961/62 Crop	Orange Crop	100% loss
	Grapefruit crop plus 10% and 2% loss of trees for each type.	94% loss
Coconuts		2009 acres.

Farm houses damaged or destroyed

650

Pasture Fencing destroyed

81 miles.

RESEARCH

112. The Policy of the research division as in 1960 continued to be investigations into the major economic crops of the country, and providing technical advice where needed, to District and Extension Staff.

LABORATORY

113. Work in the laboratory at Central Farm was greatly hampered by an inconsistent and variable electricity supply. Several pieces of equipment had to be sent to United Kingdom for repairs. Analysis of cane leaf samples for nitrogen, phosphorus and potassium continued throughout the year. Some citrus leaf analysis was also done for individual farmers. Soil analysis was done for phosphorus and potassium and Ph determinations were regularly made. Crude protein determinations were carried out at regular intervals on samples of herbage from the pangola grazing trials, and methods for the determination of crude fibre and saline soluble protein were also tried out.

CITRUS

114. No results for 1961 were obtained from the citrus trials in Stann Creek Valley as the fruit was lost in the hurricane of October. Results of the Nitrogen lime trials for 1960 are given in Tables XI to XIV. Although results are far from conclusive, the figures show some interesting trends, and it is a great pity that these trials will have to be abandoned, due to the shock to the trees by the hurricane and the uncertain future behaviour of the trees.

RESULTS FROM 1960 CROP

TABLE XI

Treatment	SITE: ALTA VISTA No. fruit	lbs. fruit	No. boxes	% juice	° Brix	% Acidity	SITE: MIDDLESEX No. fruit	lbs. fruit	No. boxes	% juice	° Brix	% Acidity
NL	834	569	6	50.26	9.50	0.79	672	437	5	49.21	11.00	0.74
2NL	773	551	6	49.62	9.75	0.90	536	380	4½	53.04	11.25	0.81
3NL	1164	703	7	48.82	9.30	0.91	706	442	5	47.32	10.83	0.82
N2L	936	571	6¼	48.97	10.00	0.83	388	239	3	50.00	11.05	0.86
N3L	977	605	6½	47.75	9.87	0.93	606	346	4	46.86	11.62	0.76
2N2L	1115	728	8	49.60	9.50	0.86	463	512	3¼	42.31	10.97	0.80
2N3L	859	556	5¾	46.25	9.87	0.80	735	453	5	42.49	10.74	0.75
3N2L	1119	712	7½	50.00	10.00	0.89	452	300	3½	47.00	11.39	0.91
3N3L	1118	702	7¼	51.19	9.62	0.90	650	424	4¾	49.12	10.61	0.72
	SITE: POMONA						SITE: ANDERSON					
NL	1869	874	9¾	46.62	10.60	0.75	268	144	1½	51.12	9.50	1.46
2NL	1771	711	8¼	45.17	10.36	0.81	214	116	1¼	52.67	9.00	1.43
3NL	1962	789	9¼	50.12	10.50	0.78	355	175	2	53.35	9.90	1.30
N2L	1891	854	9½	46.70	10.50	0.73	437	229	2½	56.35	9.30	1.25
N3L	1853	843	9¾	48.45	10.25	0.74	326	163	1¾	50.75	9.40	1.30
2N2L	2259	876	10	45.60	10.70	0.69	214	121	1½	50.97	9.40	1.21
2N3L	2117	879	9½	40.47	10.50	0.78	354	178	1¾	57.60	9.60	1.36
3N2L	2261	929	10½	50.60	11.00	0.60	245	137	1½	51.57	9.20	1.32
3N3L	1891	799	8½	46.05	10.50	0.80	273	144	1¾	48.67	9.30	1.29

TREATMENT MEANS TABLE XII

Treatment	No. fruit	lbs. fruit	No. boxes	% juice	°Brix	Acidity
NL	910	606	5½	49.40	10.27	0.93
2NL	838	439	5	50.12	10.09	0.98
3NL	1047	547	5¾	49.90	10.13	0.95
N2L	913	460	5¼	50.50	10.21	0.92
N3L	940	489	5½	48.42	10.28	0.93
2N2L	1012	524	5¾	47.12	10.14	0.89
2N3L	1016	516	5½	46.79	10.13	0.92
3N2L	1039	519	5¾	49.79	10.39	0.93
3N3L	983	517	5½	48.75	10.00	0.93

EFFECTS INCREMENTS OF NITROGEN OF MEASUREMENTS TAKEN

TABLE XIII

Treatment	No. fruit	lbs. fruit	No. boxes	% juice	°Brix	Acidity
3N	1023	526	5¾	49.48	10.17	0.94
2N	955	493	5½	48.00	10.12	0.93
N	921	465	5½	49.44	10.25	0.92

SITES

TABLE XIV

Treatment	Middlesex	Alta Vista	Pomona	Anderson	
NL	437	569	874	144	2024
2NL	380	551	711	116	1758
3NL	442	783	789	175	2189
N2L	239	571	854	229	1893
N3L	346	605	843	163	1957
2N2L	312	728	876	121	2037
2N3L	453	556	879	178	2066
3N2L	300	712	929	137	2078
3N3L	424	702	799	144	2069
TOTAL	3,333	5,777	7,554	1,407	13,071

CITRUS ROOTSTOCK INVESTIGATIONS

115. As all orange trees in British Honduras are on sour orange rootstock, and owing to the constant threat of Tristeza virus, it was decided to import some seed of recognized Tristeza resistant varieties for trials, these being Rough Lemon and Cleopatra Mandarin. These were planted in seed beds and later transplanted. The Rough Lemon showed most vigorous growth. These rootstocks are to be budded to Valencia, and eventually their performance in several rootstock trials will be tested in comparison with the standard sour oranges.

PASTURE INVESTIGATION

116. The pasture rotation grazing trial using pangola grass at Central Farm has shown some interesting preliminary results, and although not enough specific data has been obtained as yet, average liveweight gains over a 223 day grazing period have been encouraging, working out at 1.46 lbs. per animal per day. Growth of grass has been vigorous and responses to nitrogenous fertilizer very positive. There was a severe attack of froghoppers in August which turned the area brown, and it almost became necessary to remove the steers due to lack of forage. An application of malathion killed the adult froghoppers, but the whole area had to be burnt to achieve a kill of grubs in the stools. The floods following the hurricane damaged fencing and grass, and the trial was interrupted for the balance of the year.

117. Three grass variety observation trials were laid down at the following sites:-

Mile 16 (Hector Creek) Belize-Cayo Road - Pineridge soils
Acree's Ranch Boom area - Pineridge soils
Toledo near Agricultural Station - Heavy red clay soils.
Orange Walk - Black soils.

The undermentioned grasses were used in the trials:-

Pangola (Digitaria decumbens), Jaragua (Hyparrhenia rufa), Buffel (Conchrus ciliaris), Bahia (Pensacola bahia), Bermuda (Cynodon dactylon), Guinea (Panicum maximum).

Each of the six plots was subdivided into half, across the plots, the front half being fertilised with 200 lbs. of 18 -46 -0 compound.

118. Early observation showed that the varieties sown with seed on pineridge soils, germination was nil in the unfertilised portion of the plot, showing that phosphate was probably necessary for germination, and that the fertility of these soils was extremely low. Drainage is also a limiting factor on the heavier pineridge soils. From observation Jaragua and Buffel grasses would be suitable for this type of soil.

119. At Orange Walk with a lower rainfall and on a heavier black soil, jaragua and pangola grass grew vigorously whilst the other varieties lacked vigour.

120. In Toledo with a very heavy rainfall, and on heavy red clay soils, jaragua again proved most vigorous, with pangola, next best in performance.

WEEDKILLERS

121. Fernimine and Agroxone were used in trials on swamp rice and corn as post-emergency sprays, and were found to give a good kill of broad leaf weeds in both crops. A complete kill of Water Hyacinth was obtained.

122. On pastures, control of broad leaf weeds was obtained using both Fernesta and Fernimine. Woody weeds were controlled using Trioxone but "Cockspur" appeared to be resistant to a number of herbicides at different strengths.

SOIL SURVEY

123. A survey of PH changes and soil type changes was carried out in the Citrus growing area of Stann Creek Valley, working in each case from the river north, across the main road, to the hills. Most PH values were below 6.0 and in general values increased as one moved away from the river, and the soils became heavier. Liming would be beneficial in most areas.

CANE RESEARCH 1961

124. During the year much progress was made in the field of cane research. Eleven fully replicated trials were harvested. Variety trials revealed that Barbados varieties B 4098 & B 41227 consistently outyielded POJ 2878 under a wide range of conditions. New aspects of Cane Nutrition being examined include the necessity of Trace Elements, and the value of different nitrogenous and phosphatic fertilizers. The effect on yield of cane by different row distances, and distance between stools in the rows, are being investigated.

A few of these trials are commented on below:-

Fertilizers trials on Red Xaibe type soils

125. Results from 3 Fertilizer trials on this type of soil show:-

Trial I - ratoon cane growing on this type of soil needs both nitrogenous and phosphatic fertilizers together.

Trial II- there are no appreciable residual effects of either nitrogenous or phosphatic manures from one year to the next.

Trial III- Potassic fertilizers are necessary for cane growing on this red soil, especially as ratooning progresses. The following table illustrates that in this trial, no beneficial results were obtained by increasing the level of nitrogen, where the level of phosphate remains the same.

TABLE IV

TONS CANE PER ACRE TC/A

2NP	41.0						
3NP	38.9						
4NP	38.1	4N	2P	45.9	4N	2PK	50.8
		5N	2P	46.7	5N	2PK	48.0
		6N	2P	42.6			

Fertilizer trials on Black Soils Louisville type

126. On the black Louisville type of clay soil which forms perhaps two thirds of the cane growing area in British Honduras, plant cane trials 6, 7 & 8 indicate the economy of fertilizers with which a successful plant cane crop can be grown.

It was shown in Trial 6 that there was no significant increase in yields by stepping up the application of Sulphate of Ammonia from 100 to 400 lbs/ac. In trial 8 it was shown that 100 lb/ac. of triple superphosphate was sufficient to give adequate yields of cane. Trial 7 had previously been occupied by corn crops for 2 years, and so yields at the highest level of TSP are significantly better than the lowest rate of TSP. Trial 8 was put down on land just ploughed up from being under secondary forest, and unlike Trial 7, appeared to have a higher content of available phosphate. Trial 8 also revealed that an application of 50 lb/ acre of potash was sufficient for plant cane on black Louisville soils. When considering a ratoon crop on this type of black soil, it becomes apparent that phosphates are the most important plant nutrient, and that nitrogen and potash are of less importance than on red soils.

3N 3P 3K Fertilizer Trials.

127. Laid down in 1960 this trial will not be ready for harvesting till January 1962. However leaf material is being collected monthly from this trial and the following Table shows % N, P & K in the dry matter (DM).

TABLE XVI

AGE OF SAMPLE		3 M.	4 M.	5M.
Mean % N	N 0	1.49	1.59	1.29
	N 1	1.45	1.65	1.28
	N 2	1.45	1.64	1.34
Mean % P	P 0	.146	.191	.150
	P 1	.181	.206	.178
	P 2	.188	.219	.171
Mean % K	K 0	2.18	1.59	2.14
	K 1	2.22		2.12
	K 2	2.07		2.17

Trace element trials.

128. An experiment which investigates the necessity of applying to cane growing in this area the seven most important elements, was superimposed on ratoon cane at San Roman. The various trace elements and rates applied are as follows:-

ZINC	30 lb/ac.	chelated form containing	14.2% zinc
Manganese	30 lb/ac	" " "	12% Manganese
Iron	30 lb/ac	" " "	12% Iron
Copper	50 lb/ac	copper sulphate	
Boron	25 lb/ac	boron containing 11.3% boron	
Magnesium	75 lb/ac.	kieserite with 80% Magnesium Sulphate	

Treatment A- No trace elements B- all trace elements C- all trace elements less one different for each treatment.

129. Efficiency and rate of uptake of different forms of Nitrogenous and Phosphatic Fertilizer

The fertilizer recommended by the Department to Cane Growers in 1961 was a ready mixed N, P 18-46-0. Trials have now been initiated to investigate its properties as compared to sulphate of ammonia (21% N) and triple superphosphate 40% P205.

The experiment is being leaf sampled from months 3 to 9 and this data together with final yields should show:

(i) the efficiency of the ready mixed 18-40-0 as compared to sulphate of Ammonia and Triple superphosphate applied separately, and

(ii) the rate of uptake of nitrogen and phosphates in the two different forms of each.

FINANCE

130. Expenditure for 1961

(a)	Local Budget	$	$	$
	Personal Emoluments	58,413.15		
	Other Charges	104,966.02		
	Capital	-	163,379.17	
(b)	D. & W. Funds.			
	Personal Emoluments	104,589.09		
	Other Charges	95,422.51		
	Capital	13,734.80	213,746.40	377,125.57

REVENUE FOR 1961

(a)	Local Budget			
	Sale of Stores	528.35		
	Receipts - Central Farm	904.98		
	Sale of Plants & Produce	13,538.71	14,972.04	
D & W				
	D 4504 Agricultural Programme	4,561.21	4,561.21	
				$19,533.25

VISITORS

131. Sir Colin Thornley K.C.M.G., C.V.O., Governor

Sir Peter Stallard K.C.M.G., C.V.O., M.B.E., Governor

Mr. Trafford Smith)
) Colonial Office
Mr. Angus McIntosh)

Dr. G.S. Gouri, Economist, United Nations

Mr. G. Samway, Director, Commonwealth Development Corporation

Mr. Paolo Leon)
) International Bank for Reconstruction &
Mr. O.H. Calika) Development.

Mr. J. Coulter, Regional Research Centre, U.C.W.I. Trinidad

Professor P.N. Wilson)
) I.C.T.A., Trinidad
Dr. A.L. Jolly)

Mr. G. Roddan, C.M.G., Deputy Agricultural Adviser, Colonial Office Delegation.

Mr. D.F. Pearl, C.B.E., Colonial Office Delegation

Mr. Milton, Colonial Office Delegation

Mr. G. Bowen Jones, C.D.C. Colonial Office Delegation

Mr. Charles Wright.

(M.K. CHOPIN)
Ag. Chief Agricultural Officer.

APPENDIX I

LIVESTOCK

LIST OF MAIN TREATMENTS CARRIED OUT BY FARM DEMONSTRATORS AND LIVESTOCK ASSISTANTS IN 1961

DISEASE OR TREATMENT	HORSES	CATTLE	PIGS	SHEEP	POULTRY	DOGS
Worming	122	325	173	6	224	46
Castration	58	160	299	32	-	65
Distemper	20	-	-	-	-	13
Mange	38	3	-	10	-	13
Wounds and Screw Worm Infestation	66	138	-	26	-	8
Colic	25	8	-	-	-	-
Retention of Urine	6	2	1	-	-	-
Mastitis	-	6	-	-	-	-
Infectious Warts	-	39	-	-	-	1
Fowl Pox	-	-	-	-	371	-
Coccidiosis	-	-	-	-	1065	-
Pneumonia (All Causes)	1	2	-	-	-	-
Spraying	11	660	6	33	-	-
Influenza	1	-	-	-	-	-
Coryza	-	-	-	-	445	-
Lampas	9	-	-	-	-	-
Foot Rot	-	3	-	-	-	-
Removal Placenta	-	15	-	-	-	-
Preventive Vaccination						
Newcastle Disease					50	
Fowl Cholera					37	
Rabies						240
Hog Cholera			24			

APPENDIX II

SLAUGHTER HOUSE RETURNS 1961

DISTRICT	KIND	NUMBER	DRESSED WT. /LBS.	AVERAGE DRESSED WT. LBS/ANIMAL
BELIZE:				
	Cattle	2472	522,670	211
	Pigs	2946	181,116	61
	Sheep	87	2,717	31
TOLEDO:				
	Cattle	26	6,874	264
	Pigs	111	9,492	86
	Sheep	-	-	
CAYO:				
	Cattle	427	92,079	216
	Pigs	654	49,516	76
	Sheep	31	1,109	36
* STANN CREEK				
	Cattle	138	35,405	257
	Pigs	55	5,480	100
	Sheep	-	-	-
ORANGE WALK				
	Cattle	125	18,483	148
	Pigs	175	13,732	78
	Sheep	-	-	-
COROZAL				
	Cattle	127	52,445	255
	Pigs	-	-	
	Sheep	-	-	

AVERAGE DRESSED WEIGHTS FOR COUNTRY PER ANIMAL:

Cattle:	225 lbs.
Pigs	80 lbs.
Sheep	34 lbs.

* Incomplete for year - Slaughter House Records for October to December destroyed by Hurricane.

APPENDIX III

METEROLOGICAL DATA - 1961

	TEMPERATURE Mean Monthly Maximum				TEMPERATURE Mean Monthly Minimum				RELATIVE HUMIDITY % MEAN MONTHLY			
Months	Belize	Stann Creek	Toledo	Central Farm	Belize	Stann Creek	Toledo	Central Farm	Belize	Stann Creek	Toledo	Central Farm
Jan	NA	80	81	85	NA	69	65	63	NA	83	91	97
Feb	80	81	83	85	75	68	67	64	86	77	78	94
March	84	86	86	87	78	70	68	73	83	75	73	88
April	86	88	89	88	80	72	67	69	83	69	71	84
May	85	87	89	88	80	73	71	69	82	72	73	82
June	86	87	88	86	80	74	68	72	82	78	78	94
July	87	86	85	85	75	76	72	67	81	79	76	94
August	89	87	87	87	76	72	72	66	79	80	85	90
September	82	87	88	87	77	72	71	66	79	77	76	87
October	86	87	85	83	71	71	70	64	80	77	77	89
November	82	NA	84	85	68	NA	68	62	78	NA	78	90
December	83	NA	75	83	70	NA	67	60	84	NA	77	91

APPENDIX IV

SUMMARY FOR RAINFALL 1961

Dist & Stations	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec.	Total 1961	Total 1960	Average 10 years
Corozal Dist. Corozal Town	1.37	2.39	.78	5.22	1.62	4.70	N.A.	5.73	2.98	4.04	3.10	N.A.	N.A.	62.24	N.A.
Corozal Agstat	1.45	2.58	.95	4.06	3.94	3.60	11.11	5.73	3.58	4.04	3.89	2.67	47.60	82.42	?
Louisville	3.99	2.66	1.07	1.74	3.34	8.63	18.09	5.67	6.64	7.90	4.73	1.67	63.13	65.12	54.38
Pembroke Hall	2.48	4.28	1.67	.96	2.93	5.49	16.42	5.52	5.74	8.74	3.15	N.A.	N.A.	59.03	N.A.
Orange Walk Dist. Gallon Jug	5.77	3.78	1.82	2.89	3.37	7.89	N.A.	6.42	4.21	12.81	3.34	4.30	N.A.	69.48	N.A.
Orange Walk Agstat	4.60	3.83	2.75	2.02	2.90	7.38	15.27	8.60	3.00	10.99	7.60	2.03	68.97	55.93	50.69 (C)
August Pine Ridge	2.05	2.64	1.31	1.65	2.27	4.36	8.12	5.18	3.16	4.95	4.35	1.65	41.69	38.69	54.77(A)
Belize District Belize Town	7.32	6.15	3.70	.61	3.90	5.92	19.43	3.90	13.69	N.A.	N.A.	N.A.	N.A.	66.69	N.A.
Salt Creek Estate	4.57	4.30	3.48	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Gracie Rock	7.43	9.09	4.98	1.29	N.A.	8.71	18.07	4.61	8.81	6.45	5.05	7.36	N.A.	85.34	N.A.
Maskalls	8.05	4.77	3.44	1.00	.45	6.13	17.49	5.46	3.88	23.02	8.75	5.03	88.27	64.95	66.50 (A)
Stanley Field	5.58	7.88	4.16	2.30	2.44	N.A.	26.34	8.08	6.50	N.A.	N.A.	N.A.	N.A.	68.41	N.A.
Luckystrike	7.21	5.91	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

CAYO DISTRICT															
Cayo Town	9.80	6.57	.58	2.09	6.35	7.94	15.84	6.70	15.66	N.A.	N.A.	N.A.	N.A.	72.98	N.A.
Central Farm	8.30	4.18	1.64	4.65	.85	7.30	20.41	6.61	6.33	11.55	1.73	3.67	43.71	77.22	61.07
Benque Viejo	7.25	3.13	.10	1.05	3.94	8.06	12.02	5.20	4.39	13.88	2.50	1.74	63.20	53.60	54.85
Roaring River	6.37	7.65	2.77	1.12	1.08	6.36	20.36	8.43	8.00	N.A.	1.83	7.45	N.A.	N.A.	N.A.
Norland	7.80	3.39	2.22	2.86	1.45	6.70	17.65	7.43	6.13	17.16	2.46	3.93	79.18	70.50	65.34 (A)
Caves Branch	10.16	5.76	5.58	1.76	1.97	8.26	21.42	12.49	7.82	N.A.	3.97	9.86	N.A.	98.43	N.A.
Never Delay	8.35	6.90	2.09	.85	.57	5.62	17.43	6.43	6.10	N.A.	4.37	6.72	N.A.	76.30	N.A.
Sibun Camp	11.35	6.28	5.81	3.35	.79	8.97	20.68	14.71	11.19	N.A.	4.61	N.A.	N.A.	110.74	N.A.
Coona Cairn	12.46	6.36	3.10	1.66	3.17	7.63	14.88	3.25	5.80	N.A.	3.76	4.68	N.A.	N.A.	N.A.
Mai Station	N.A.	5.87	1.17	1.33	4.02	6.29	13.29	8.02	7.84	N.A.	2.21	2.19	N.A.	N.A.	N.A.
Stann Creek District															
Stann Creek Town	12.76	2.49	3.00	3.02	2.21	2.94	14.17	5.97	5.84	N.A.	N.A.	N.A.	N.A.	35.85	N.A.
Stann Creek Agstat	12.76	3.15	1.76	3.50	2.07	9.99	17.12	10.99	7.78	17.08	11.53	9.88	98.04	93.58	87.34
Cow Creek Farm	N.A.	N.A.	N.A.	N.A.	N.A.	14.16	25.06	10.68	8.68	N.A.	N.A.	N.A.	N.A.	116.05	N.A.
Alta Vista	12.99	4.41	1.74	1.80	2.75	13.75	24.78	11.84	9.95	N.A.	N.A.	N.A.	N.A.	111.77	N.A.
Middlesex	11.26	4.38	1.91	1.54	2.54	18.80	25.89	12.35	10.42	N.A.	7.88	7.48	N.A.	96.64	N.A.
Melinda	13.46	3.09	2.07	4.29	3.44	7.32	17.36	11.00	8.10	N.A.	N.A.	N.A.	N.A.	101.24	N.A.
Ponona	13.26	3.70	1.88	2.81	2.57	10.50	19.76	11.83	8.86	N.A.	8.81	9.13	N.A.	102.35	N.A.
Mango Creek	N.A.	N.A.	N.A.	2.70	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	117.94	N.A.
Sittee River	14.35	2.22	2.23	1.28	.36	N.A.	19.45	8.32	8.40	22.01	1.99	7.81	N.A.	76.84	N.A.

	Jan.	Feb	Mar	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total 1961	Total 1960	Average 10 years
Toledo District															
Punta Gorda Town	12.48	8.71	.89	11.16	4.06	29.19	46.31	33.67	21.04	23.18	8.54	7.07	206.30	158.72	154.09
Punta Gorda Agstat	12.92	4.33	3.47	8.J9	2.37	23.08	39.49	26.62	14.19	10.46	7.64	7.07	159.83	157.61	N.A.
San Antonio	N.A.	4.75	N.A.	N.A.	N.A.	6.62	18.14	14.25	15.00	3.97	N.A.	N.A.	N.A.	104.22	N.A.
Barranco	12.13	14.63	4.97	9.13	2.98	36.43	37.07	31.20	13.08	14.73	9.64	N.A.	N.A.	200.38	N.A.
Crique Sarco	8.09	9.50	5.33	5.99	4.34	28.72	45.38	10.27	N.A.	N.A.	10.08	N.A.	N.A.	161.91	N.A.
Machaca Camp	10.95	5.88	1.51	3.38	4.32	19.58	28.48	15.95	18.45	13.33	5.75	N.A.	N.A.	122.56	N.A.
Monkey River	17.42	4.03	1.12	2.27	1.63	3.50	20.87	10.66	10.18	9.24	5.75	6.61	93.28	158.03	N.A.
Columbia	11.78	4.12	4.03	3.04	6.58	20.62	21.34	16.36	20.78	9.04	7.32	N.A.	N.A.	129.48	N.A.

NOTE A – 8 years B – 7 years C– 5 years 0 – No records N.A. – Not available N.S. New Station

APPENDIX V

AGRICULTURAL IMPORTS 1961 - CUSTOMS DEPARTMENT FIGURES

ITEM	NO.	QUANTITY	VALUE $
Cattle for breeding	No.	1	2,272
Poultry for breeding	No.	42,493	19,699
Butter	x 100 lb.	1,767	108,291
Cheese	x 100 lb.	3,400	198,400
Cocoa prepared	x 100 lb.	671	47,528
Coffee ground	x 100 lb.	306	71,065
Eggs- fresh	doz.	11,310	8,164
Fish - fresh frozen	x 100 lb.	20	1,049
- dried or salted	x 100 lb.	161	5,709
- preparations canned	x 100 lb.	1,162	47,119
Rice	x 100 lb.	11,122	109,319
Flour - wheat	x 100 lb.	128,474	830,075
other cereals	x 100 lb.	233	8,273
Peas & Beans R.K.	x 100 lb.	11,273	171,328
Lard & Substitutes	x 100 lb.	18,293	426,523
Meat Product - in barrels	x 100 lb.	5,212	156,527
- canned	x 100 lb.	2,763	139,815
- fresh	x 100 lb.	1,186	61,451
Ham & Bacon	x 100 lb.	963	56,821
Sausages	x 100 lb.	578	35,320
Milk - fresh	x 100 lb.	29	360
- evaporated & condensed	x 100 lb.	44,766	917,577
- powdered	x 100 lb.	8,413	89,411
Miscellaneous Dairy Products	x 100 lb.	2,194	10,504
Maize	x 100 lb.	6,002	29,109
Sugar - refined	x 100 lb.	3,119	112,136
- other sugar & syrup	x 100 lb.	1,020	12,010
Spices	x 100 lb.	368	21,144
Vegetables - potatoes	x 100 lb.	13,138	88,709
- others fresh	x 100 lb.	8,458	93,208
- canned	x 100 lb.	5,661	101,037
Tobacco - Manufactured	lb	486	1,089
- unmanufactured others	lb	71,756	54,196
- cigarettes	lb	88,797	232,089
- cigars	lb	929	3,193
Fruit - fresh	x 100 lb.	148	38,459
Animal feeding stuffs	x 100 lb.	17,212	131,634

APPENDIX VI

AGRICULTURAL EXPORTS 1961 - CUSTOMS DEPARTMENT FIGURES

ITEM	NO	QUANTITY	VALUE $
Bananas	Bunches	14,192	11,621
Citrus- Grapefruit Fresh	x 100 lb	12,880	119,600
Grapefruit - Juice	x 100 lb	7,484	86,844
- Segments canned	x 100 lb.	19,947	402,389
- concentrate	x 100 lb.	1,881	52,904
- Oil	lb.	1,263	4,056
Oranges - Fresh	x 100 lb.	112 1,906	1,300 3,832
- Concentrate	x 100 lb.	47,843	1,529,830
- Juice	x 100 lb.	108,979	1,196,264
- Oil	lb.	629,143	110,090
Coconuts - Nuts	x 100 nuts	65,318	30,090
- copra	x 100 lbs.	-	-
- dessicated	lbs.	17,000	3,420
Cocoa - Beans	lbs.	37,882	12,754
Cohune - Kernels	x 100 lb.		
Fruit Various	x 100 lbs.	533	2,287
Honey	lb.	92,524	16,175
Hides & Skins	-	-	-
Sugar - unrefined	x 100 lb.	561,198	4,021,815
- other sugar & syrup	galls.	165,830	30,743
Eggs - Fresh	doz.	25,049	15,104
Fish - Fresh	lb.	98,330	27,725
- dried	lb.	39,931	6,275
- conch	lb.	104,492	35,199
Lobsters - tails	lb.	228,595	146,573
- whole	lb.	37,725	17,934
Lime - Oil	lb.	-	-
Shrimps	lb.	-	-
Cattle	No.	5	1,165
Vegetables	lbs.	1,430	157

APPENDIX VII

STAFF LIST 1961

TITLE	NAME	REMARKS
Director of Agriculture		VACANT
Senior Agricultural Officer	A.N.C. THOMAS B.Sc. (Agric.)	Acting Director of Agriculture January -April. Leave in U.K. Post declared redundant in October & officer retired.
Chief Extension Officer	M.K. CHOPIN B.A.	Acting Senior Agricultural Officer. January - April. Ag. Director of Agriculture from April. Posts of C.E.O. & S.A.O. combined in October as Asst. Director of Agriculture.
Agricultural Officers	R.S. PITT B.S.A. E.G. RUSSELL B.S.A.	Agricultural Officer, Stann Creek On Vacation Leave Jan. - May. Agricultural Officer, Orange Walk from June.
	G.E. Ellis, B.S.A.	Agricultural Officer, Cayo from June. 2 Vacancies - Toledo and Belize.
Agricultural Education Officer	R. Hill M.A. (CANTAB)	
Land Clearing Engineer	J.B. Hutchinson	
Veterinary Officer	S.D. Wilkie M.R.C.V.S.	1 Vacancy.
Farm Manager	E.D. Kemp	
Cocoa Officer	G.L. Ogilvie	
Agronomist	D.P.H. Tucker B.Sc. Dip. Agric. Sci. (CANTAB)	
Agricultural Chemist		Vacant
Cane Farming Officer	B. Walker B.Sc.	
Asst. Agricultural Officer	J.A. Lizama Dip. Agric. E.C.F.I.	Acted as Agricultural Officer Toledo. 5 Vacancies.
Coconut Agronimist		Vacant
Equipment Overseer	R.E. Jex	
Accountants Grade II	S.E. Tench K.E. Richardson	
Assistant Analysts	R.R. Locke H.H. Hall N. Wade	 From August

TITLE	NAME	REMARKS
Sr. Farm Demonstrators	W.J. Baeza	Inspector of Apiaries
	C.D.W. Atkins	Acted as Agricultural Officer, Belize.
	J.A. Swasey	Acted as Agricultural Officer Orange Walk Jan - May.
	T.L. Brackett	Sick Leave 17.3.61 to 11.7.61
Farm Demonstrators Grade I	H.S. Nelson	Attached to Agric. School from September
	F. Bautista	
	T.T. Ramos	Acting Secretary, C.I.B.
	J.A. Santos	
	A.F. Thompson	
	N.L. Williams Dip. Agric. E.C.F.I.	
	A.P. Bautista Dip. Agric. E.C.F.I.	
	E.F. Bautista Dip. Agric. E.C.F.I.	
	G.S. Castillo	
	E.O.R. Gill	4 H work, but transferred to District Extension Work.
	J. Gonzales	
	N.E. Mackenzie	
	L.A. Marin	Attached to L.C.U.
	F.B. Arana Dip Agric. E.C.F.I.	Attached to Agric. School Jan. - June. Then worked on Agric. Census at Headquarters.
	L.B. Flores	Returned from Training in Puerto Rico in August.
Farm Demonstrators Grade II	A. Gentle	
	H.A. Williams	
	H.A. Reyes	Proceeded to ECFI for 2 years Diploma course in September.
	M. Avila	
	P.B. Lizarraga Jr.	
	J.E. Carillo	
	S. Escalante	
	G. Hernandez	
	A. Tzul	Returned from training in Puerto Rico in August and posted to Amerindian Officer - Toledo
	R. Zetina	
	C.C. Palacio	
	F.B. Cayetano	
	M. Braham	Attached C.I.B.
	R.E. Majarrez	Returned from training in Puerto Rico in August. Transferred from C.I.B. to Cane Research Station
	N. Rivas	Attached C.I.B.
Station Foremen	J. Jacobs	Agstat Toledo
	H.C. Bennett	Agstat Orange Walk
	H.J. Ford	Cane Station
	L. Chan	Cane Station

TITLE	NAME	REMARKS
Home Economics Demonstrator	Mrs. J. Bedran de Aguallo	4H Work
Asst. Home Economics Demonstrator	Miss Elvira Kotch	4H Work
Asst. Home Economics Demonstrator	Miss Wilma Sabala	4H Work
Senior Technical Asst. (Artist)	L. Leslie	
Senior Mechanics	W.A. Saunders O.A. Meyers	
Mechanic	M.L. Cocom	
Clerk Land Clearing	F.H. Diego	
Clerk Handyman Assistant	C. Harrison	
Clerk Storekeeper	O.T. Pascascio D.P. Heredia Mrs. A.A. Smith H.E. Lightburn Jr. G.G. Ysaguirre E.O. Flores	
Clerk Grade II	W. Craig	
Typist Grade II	Miss A. Reyes	
Clerk/Typist	Mrs. Maria del C. Reyes	

APPENDIX VIII

LOCAL WEIGHTS AND MEASURES

1 quartia - ½ almud - 2½ quarts

1 almud - 5 quarts

1 benequen - 15 quarts

1 shushack - 4 almuds

1 cargo - 60 quarts - 12 almuds

1 barrel -110 quarts

300 ears of corn in husk - 60 hands
1 hand - 5 ears i.e. the number picked up in each hand when counting ears
60 hands - 300 ears - (should shell out to) 1 cargo

1 mecate - 1 task - 25 yards x 25 yards approximately
one-eighth acre

16 mecates - 1 manzana - approximately 2 acres
(8½ varas plus 1 machete length - 1 mecate)

1 cart load firewood - 300 sticks at 3 feet long

1 fathom - 6 feet - brassada

(brassada is literally the distance
between out-stretched arms (brazos))

CITRUS

A unit of grapefruit is a 70 lb. box

A unit of oranges is a 90 lb. box

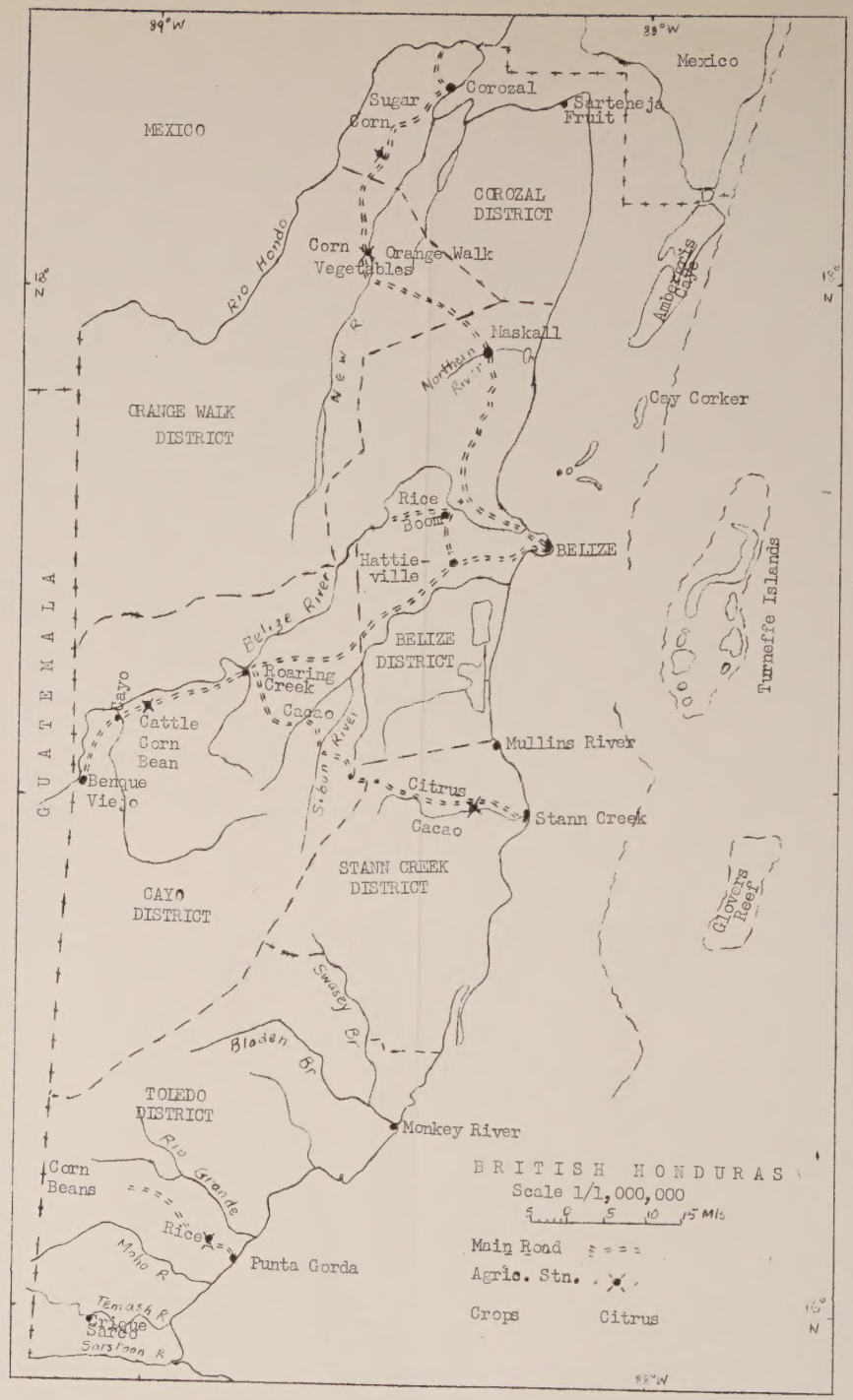
A/2 juice carton contains 24 x 12 oz. tins

A/10 juice carton contains 12 x 24 oz. tins

Barrels contain 43 gallons

4 British Honduras Dollars equal £1 Sterling

1 British Honduras Dollar equals Five Shillings Sterling.


89°W
88°W
Mexico
MEXICO
Corozal
Sugar Corn
Sarteneja Fruit
COROZAL DISTRICT
Corn Vegetables
Orange Walk
Rio Hondo
New R
Maskall
Northern River
Ambergris Caye
Cay Corker
ORANGE WALK DISTRICT
Rice
Boom
BELIZE
Hattie-ville
Belize River
BELIZE DISTRICT
Turneffe Islands
GUATEMALA
Roaring Creek
Cattle
Corn
Bean
Cacao
Mullins River
Benque Viejo
Citrus
Cacao
Stann Creek
Sibun River
STANN CREEK DISTRICT
CAYO DISTRICT
Glovers Reef
Swasey Br
Bladen Br
TOLEDO DISTRICT
Monkey River
Rio Grande
Corn
Beans
Rice
Punta Gorda
Moho R
Temash R
Sarstoon R
BRITISH HONDURAS
Scale 1/1,000,000
0 5 10 15 Mls
Main Road
Agric. Stn.
Crops
Citrus
15° N
88°W